JAN 2 3.2002

SEQUENCE LISTING

<110> Gorenstein, David G. Luxon, Bruce A. Herzog, Norbert Aronson, Judy

<120> Thio-Modified Aptamer Synthetic Methods and Compositions

<130> 122144-001001

<140> 09/425,804

<141> 1999-10-25

<150> 60/105,600

<151> 1998-10-26

<160> 50

<170> PatentIn Ver. 2.1

<210> 1

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<221> misc feature

<222> (24)..(44)

<223> n is A, T, G or C

<220>

<223> Description of Artificial Sequence; aptamer

<400> 1

cagtgeteta gaggateegt gaennnnn nnnnnnnn nnnnnegaag ettategate egageg

<210> 2

<211>22

<212> DNA

<213> Artificial Sequence

<220> description of Artificial Sequence: aptamer

| <400> 2 | 22 |
|---|----|
| gccgtccaca tacgacacca cc | 22 |
| <210> 3 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 3 | |
| ggccgaccgc acagcacaac cc | 22 |
| <210> 4 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 4 | |
| ggcgcggata caacccacac gc | 22 |
| <210> 5 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 5 | |
| gggecegetg tacatgeaca eg | 22 |
| <210> 6 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| * * * | |

| <400> 6 | |
|---|----|
| ggccgaccgc acagcacaac cc | 22 |
| <210> 7 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> description of Artificial Sequence: aptamer | |
| <400> 7 | |
| gggcccgctg tacatgcaca cg | 22 |
| <210> 8 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| 215- Antificial Bequeice | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 8 | |
| gggcccgctg cacgtgcaca cg | 22 |
| <210> 9 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 9 | |
| gggcccgctg tacacgcaca cg | 22 |
| | |
| <210> 10 | |
| <211> 22 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Description of Artificial Sequence: aptamer | |
| <400> 10 | |
| | |

| cccgttgttg tcccactcca cg | 22 |
|---|----|
| <210> 11 <211> 22 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 11 cccgttgttg tcccgctcca cg | 22 |
| <210> 12 <211> 10 <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 12 gttgcgcaac | 10 |
| <210> 13 <211> 10 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 13 gctgtacatg | 10 |
| <210> 14 <211> 10 <212> DNA <213> Description of Artificial Sequence: aptamer | |
| <400> 14 gttgtcccac | 10 |
| <210> 15 <211> 10 <212> DNA <213> Artificial Sequence | |

| <220> <223> Description of Artificial Sequence: aptamer | | |
|--|----|----|
| <400> 15 gttgttgtcc | | 10 |
| <210> 16 <211> 20 <212> DNA <213> Artificial Sequence | | |
| <220> <223> Description of Artificial Sequence: aptamer | | |
| <400> 16 tgcagattgc gcaatctgca | | 20 |
| <210> 17 <211> 22 <212> DNA <213> Artificial Sequence | | |
| <220> <223> Description of Artificial Sequence: aptamer | | |
| <400> 17 cgtgtgcatg tacagcgggc cc | 22 | |
| <210> 18 <211> 42 <212> DNA <213> Artificial Sequence | | |
| <220> <223> Description of Artificial Sequence: aptamer | | |
| <400> 18 ccaggagatt ccacccagga gattccaccc aggagattcc ac | | 42 |
| <210> 19 <211> 14 <212> DNA <213> Artificial Sequence | | |

<220>

| <223> Description of Artificial Sequence: aptamer | |
|---|----|
| <400> 19 ccaggagatt ccac | 14 |
| <210> 20 <211> 10 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 20 ggggacttcc | 10 |
| <210> 21 <211> 62 <212> DNA <213> Artificial Sequence | |
| <220> <221> misc_feature <222> (19)(41) <223> n is A, T, G or C | |
| <400> 21 atgetteeae gageettten nnnnnnnnn nnnnnnnnn netgegagge ggtagtetat te | 62 |
| <210> 22 <211> 22 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 22 ggggcggggg gatatggaca cc | 22 |
| <210> 23 <211> 22 <212> DNA <213> Artificial Sequence | |

<220>

| <223> Description of Artificial Sequence: aptamer | |
|--|----|
| <400> 23 gggctggtgt ggtagactcc cc | 22 |
| <210> 24 <211> 22 <212> DNA | |
| <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 24 cccgcccaca cacaccgccc cc | 22 |
| <210> 25 <211> 23 <212> DNA <213> Artificial Sequence | |
| <400> 25 gggccgggag agaacatagc gac | 23 |
| <210> 26 <211> 22 <212> DNA <213> Artificial Sequence | |
| <220> <221> misc_feature <222> (4) <223> n is A, T, G or C | |
| <220> <221> misc_feature <222> (6)(8) <223> n is A, T, G or C | |
| <400> 26 ccenennnea cacacegece ee | 22 |
| <210> 27 <211> 22 <212> DNA <213> Artificial Sequence | |

| <220> <223> Description of Artificial Sequence: aptamer | |
|--|----|
| <400> 27 ggtatactct ccgcccctcc cc | 22 |
| <210> 28 <211> 26 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 28 cccacatgta cacgccgccc ccgccc | 26 |
| <210> 29 <211> 22 <212> DNA <213> Artificial Sequence | |
| <220> <221> misc_feature <222> (9) <223> n is A, T, G or C | |
| <220> <221> misc_feature <222> (14) <223> n is A, T, G or C | |
| <400> 29 cccacatgna caencegeee ee | 22 |
| <210> 30 <211> 22 <212> DNA <213> Artificial Sequence | |
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 30 gggcgtatat gtgtggcggg gg | 22 |

| <210> 31 <211> 14 <212> DNA <213> Artificial Sequence | |
|--|----|
| <220> <223> Description of Artificial Sequence: aptamer | |
| <400> 31 gtggaatctc ctgg | 14 |
| <210> 32 <211> 14 <212> DNA <213> Artificial Sequence | |
| <220> <221> modified_base <222> (9) <223> thymidine 3'-O-phosphorothioate | |
| <220> <221> modified_base <222> (10) <223> thymidine 3'-O-phosphorothioate | |
| <400> 32 ccaggagatt ccac | 14 |
| <210> 33 <211> 14 <212> DNA <213> Artificial Sequence | |
| <220> <221> modified_base <222> (2) <223> thymidine 3'-O-phosphorothioate | |
| <220> <221> modified_base <222> (12) <223> thymidine 3'-O-phosphorothioate | |
| <400> 33 gtgggaatete etgg | 14 |

```
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<222> (7)
<223> thymidine 3'-O-phosphorothioate
<220>
<221> modified_base
<222> (9)
<223> thymidine 3'-O-phosphorothioate
<400> 34
gtggaatctc ctgg
<210> 35
<211> 14
 <212> DNA
 <213> Artificial Sequence
 <220>
 <221> modified_base
 <212> (2)
 <213> thymidine 3'-O-phosphorothioate
 <220>
 <221> modified_base
 <222> (7)
 <223> thymidine 3'-O-phosphorothioate
 <220>
 <221> modified_base
 <222> (9)
 <223> thymidine 3'-O-phosphorothioate
  <220>
```

<210> 34

<221> modified_base <222> (12) <223> thymidine 3'-O-phosphorothioate

<400> 35

gtggaatctc ctgg

```
<210> 36
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<212> Compliment (2)
<213> phosphorothioate
<220>
<221> modified_base
<212> Compliment (12)
<213> phosphorothioate
<220>
<223> Description of Artificial Sequence: aptamer
<400> 36
ccaggagatt ccac
                                                                          14
<210> 37
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified base
<212> Compliment (5)
<213> phosphorothioate
<220>
<221> modified_base
<212> Compliment (7)
<213> phosphorothioate
<220>
<223> Description of Artificial Sequence: aptamer
<400> 37
                                                                          14
ccaggagatt ccac
<210> 38
```

<211> 14 <212> DNA

```
<220>
<221> modified_base
<222> Complement (2)
<223> phosphorothioate

<220>
<221> modified_base
<222> Compliment (5)
<223> phosphorothioate

<220>
<221> modified_base
```

<213> Artificial Sequence

<220>

<221> modified_base <222> Compliment (12)

<222> Compliment (7) <223> phosphorothioate

<223> phosphorothioate

<220>

<223> Description of Artificial Sequence: aptamer

<400> 38

ccaggagatt ccac

<210> 39

<211> 14

<212> DNA

<213> Artificial Sequence

<220>

<221> modified_base

<222> (9)..(10)

<223> phosphorothioate

<220>

<221> modified_base

<222> Complement (2)

<223> phosphorothioate

<220>

<221> modified_base

<222> Complement (12)

8

```
<223> phosphorothioate
<220>
<223> Description of Artificial Sequence: aptamer
<400> 39
                                                                          14
ccaggagatt ccac
<210> 40
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified base
<222> (9)..(10)
<223> phosphorothioate
<220>
<221> modified_base
<222> Complement (5)
<223> phosphorothioate
<220>
<221> modified base
<222> Complement (7)
<223> phosphorothioate
<223> Description of Artificial Sequence: aptamer
<400>38
                                                                          14
ccaggagatt ccac
<210> 40
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<222> (9)..(10)
<223> phosphorothioate
<220>
```

<221> modified base

```
<222> Complement (2)
<223> phosphorothioate
<220>
<221> modified_base
<222> Complement (5)
<223> phosphorothioate
<220>
<221> modified_base
<222> Complement (7)
<223> phosphorothioate
<220>
<221> modified_base
<222> Complement (12)
<223> phosphorothioate
<220>
<223> Description of Artificial Sequence: aptamer
<400> 41
ccaggagatt ccac
<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: aptamer
<400> 42
agttgagggg actttcccag gc
<210> 43
<211> 43
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<212> (9)
<213> phosphorodithioate
```

<220>

14

```
<221> modified_base
<212> (20)
<213> phosphorodithioate
<220>
<221> modified base
<212> (9)
<213> phosphate ester
<220>
<221> modified_base
<212> (20)
<213> phosphate ester
<400> 43
                                                                          43
ccaggagatt ccacttttgt ggaatctcct gga
<210> 44
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<222> (9)
<223> dithioate
<220>
<221> modified_base
<222> (10)
<223> dithioate
<220>
<223> Description of Artificial Sequence: oligonucleotide phosphorodithioate
<400> 44
                                                                           14
ccaggagatt ccac
<210> 45
<211> 14
<212> DNA
<213> Artificial Sequence
<220>
<221> modified_base
<222> (3)
```

| <223> adenine phosphorodithioate | |
|---|----|
| <220> <221> modified_base <222> (13) <223> adenine phosphorodithioate | |
| <400> 45 | 14 |
| ccaggagatt ccac <210> 46 <211> 14 <212> DNA <213> Artificial Sequence | |
| <220> <221> modified_base <222> (6) <223> adenine phosphorodithioate | |
| <220> <221> modified_base <222> (8) <223> adenine phosphorodithioate | |
| <400> 46 ccaggagatt ccac | 14 |
| <210> 47 <211> 14 <212> DNA <213> Artificial Sequence | |
| <220> <221> modified_base <222> (3) <223> adenine phosphorodithioate | |
| <220> <221> modified_base <222> (6) <223> adenine phosphorodithioate | |
| <220> <221> modified_base <222> (8) | |
| | |

- <223> adenine phosphorodithioate
- <400> 47

ccaggagatt ccac

14

- <210> 48
- <211> 14
- <212> DNA
- <213> Artificial Sequence
- <220>
- <221> modified_base
- <222> (6)
- <223> adenine phosphorodithioate
- <220>
- <221> modified_base
- <222> (8)
- <223> adenine phosphorodithioate
- <220>
- <221> modified_base
- <222> (13)
- <223> adenine phosphorodithioate
- <400> 48

ccaggagatt ccac

- <210> 49
- <211> 14
- <212> DNA
- <213> Artificial Sequence
- <220>
- <221> modified_base
- <222> (3)
- <223> adenine phosphorodithioate
- <220>
- <221> modified_base
- <222> (6)
- <223> adenine phosphorodithioate
- <220>
- <221> modified_base
- <222> (8)

| <223> | adenine phosphorodithioate | |
|----------------|---|----|
| <220> | | |
| <221> | modified_base | |
| <222> | (13) | |
| <223> | adenine phosphorodithioate | |
| <220> | | |
| <223> | Description of Artificial Sequence: aptamer | |
| <400> | 49 | |
| | | 14 |
| <210> | 50 | |
| <211> | | |
| <212> | | |
| | Artificial Sequence | |
| 1213 | Thimelar bequence | |
| <220> | | |
| | modified base | |
| <222> | | |
| | adenine phosphorodithioate | |
| - 22 5- | addinio phosphotodianomo | |
| <220> | | |
| | modified base | |
| <222> | | |
| | phosphorodithioate | |
| 1225 | phosphotodianout | |
| <220> | | |
| | modified base | |
| <222> | | |
| | phosphorodithioate | |
| | rr. | |
| <220> | | |
| | modified_base | |
| <222> | | |
| | phosphorodithioate | |
| | r | |
| <220> | | |
| | Description of Artificial Sequence: aptamer | |
| | 1 | |
| <400> | 50 | |
| | | |

ccaggagatt ccac